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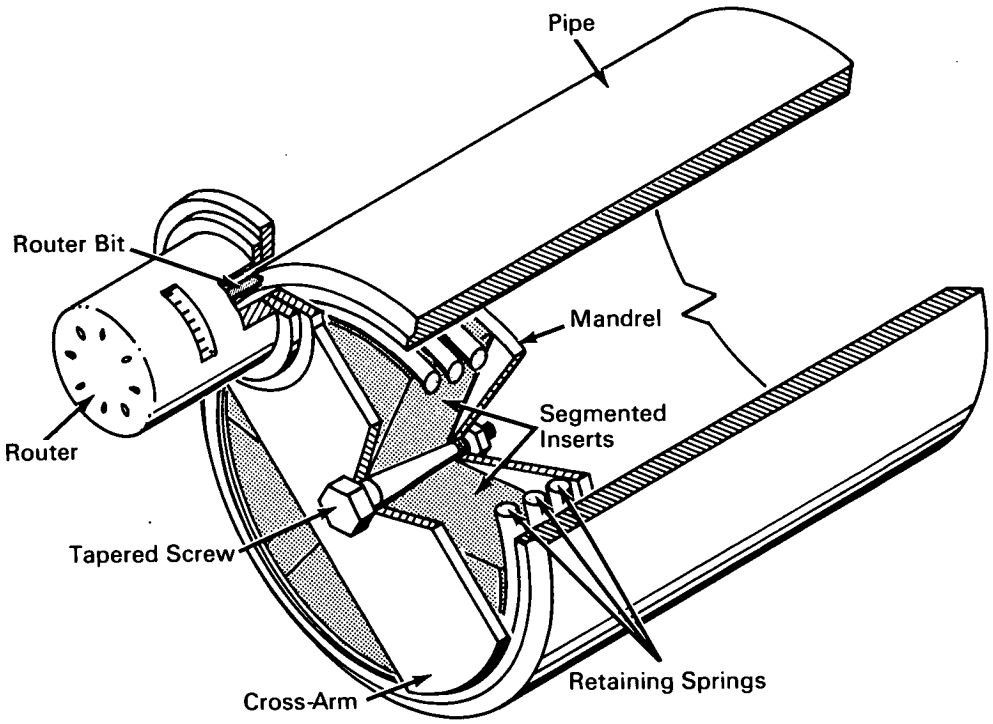
NASA TECH BRIEF

Portable Power Tool Machines Weld Joints in Field



The problem:

Pipe sections used in the field for transfer of cryogenic fluids are manufactured with a special weld joint configuration on each end. When other than standard lengths of pipe must be replaced for any reason, the special weld joint configuration must be prepared in the field.

The solution:

A portable routing machine adapted to cut the precise weld joints required.

How it's done:

The tool is a standard commercial router that is mounted and held in place by straightforward mechanical forces in such a way that it operates to cut the desired weld joint. Six pie-shaped segments, forming a circular mass, are placed in the mandrel and retained by three springs. The outside diameter of the assembled segments is slightly less than the inside diameter of the pipe and they form a tapered hole at the center to receive the tapered screw. A crossarm is

(continued overleaf)

attached to the mandrel and segments by means of the tapered screw and the entire assembly is placed in the end of the pipe to be welded. Takeup on the tapered screw forces the segments against the inside of the pipe, providing a rigid mounting platform for the router crossarm and removing any ovality in the end of the pipe. A standard commercial router is attached to the crossarm which has a spring-loaded pin to hold it firmly in place while the router is being positioned for depth of cut. The router is turned on and operated in the counterclockwise direction. A special stop is provided in the mandrel to prevent the router from being operated in the wrong (clockwise) direction.

Notes:

1. This tool could be adapted for use on pipes and tubes of many sizes. A selection of router bits would permit finishing of pipe ends in a variety of configurations.
2. Inquiries concerning this invention may be directed to:

   Technology Utilization Officer
   Marshall Space Flight Center
   Huntsville, Alabama, 35812
   Reference: B66-10145

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C., 20546.

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